**BEFORE THE**
**FEDERAL COMMUNICATIONS COMMISSION**
**WASHINGTON, DC 20554**

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| In the Matter of: | ( | |
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| A National Broadband Plan for Our Future | ( | GN Docket Nos. 09-47, 09-51, 09-137 |
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# COMMENTS BY CONNECTED NATION

## NBP Public Notice # 16 – BROADBAND ADOPTION

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## I. INTRODUCTION

From its inception as a public-private partnership over seven years ago, Connected Nation has worked to increase broadband adoption in both households and small businesses. Economic improvement and increasing opportunity are foundational goals of Connected Nation's work, and High-speed Internet services are a transformational tool for individuals, businesses and government, but broadband's benefits cannot be sustainably realized until the transformational tool is utilized. As the Commission continues to develop the National Broadband Plan called for in the American Recovery and Reinvestment Act, Connected Nation is pleased to be given the opportunity to continue offering testimony from its experiences. This document seeks to provide insight into the singular importance of broadband adoption and how a number of programs identified as best practices have worked to increase broadband adoption rates.

Based on its experience, Connected Nation is convinced that for most of the U.S., ensuring broadband adoption by households and businesses holds equal importance to broadband availability, and that understanding both drivers and barriers to broadband adoption at the local level is an integral part of any effort to spur the adoption of high-speed Internet services. (To be sure, for places in the U.S. that can still be classified as "unserved" by broadband, availability of broadband by at least one terrestrial platform must be a priority that merits engaged assistance from public-private partnerships, ideally incorporating stakeholders at the local, state, and federal level.)

Connected Nation's experience tells us that efforts to increase broadband adoption begin and end with research and locally-based, community involvement. Research, conducted at the county-level, identifies variances in broadband adoption barriers and drivers from community to

community in each state, which then provides community stakeholders customized data that can assist in the creation of a customized plan to raise broadband adoption rates.

Connected Nation's research has indicated startling broadband adoption gaps in at-risk populations,[1] and has identified highly common barriers to broadband adoption across the U.S. population at-large.[2]

In this specific request for comment, the Commission asks questions regarding ways to measure broadband adoption; the costs of digital exclusion; barriers to adoption and how to overcome them; and ways the Commission and country can learn from existing programs. Connected Nation will address the Commission's request for comment by offering its insight on measuring broadband adoption and how Connected Nation's various programs have combined a focus on broadband adoption (demand) with efforts to improve broadband availability (supply).

Connected Nation is a non-profit organization that grew out of a successful pilot initiative called ConnectKentucky, which undertook a statewide project from 2004-2007 to expand broadband adoption and is currently working across Kentucky to increase computer ownership, improve digital literacy, and help close the final rural gaps in broadband availability.[3] Connected Nation believes that no community should be left behind and that it is the responsibility of government and policymakers to ensure that all communities and individuals have the opportunity to participate in the Information Economy.[4]

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[1] See Figure 1

[2] *Consumer Insights into American Broadband Challenge, A Connected Nation Policy Brief*, Oct. 2008, available at http://www.connectednation.org/_documents/ConsumerInsightsBroadbandChallenge_20081013.pdf

[3] Senator Richard Durbin has said: "Since its formation in 2001, Connect Kentucky has brought state government, providers, technology companies, and economic development units together to build one of the most innovative organizations in the country. . . . On a budget of only a couple million dollars per year, this organization has become a driving force of economic development and telehealth and education in the State of Kentucky." Sen. Richard Durbin, Floor Statement: Increasing Broadband Access to Improve Competitiveness (Apr. 24, 2007) (available at http://durbin.senate.gov/showRelease.cfm?releaseId=280899).

[4] As Commissioner Deborah Taylor Tate stated, "our rural and less-populated states and regions

The Connected Nation model, which has received considerable attention and praise from both the Legislative and Administrative branches of the Federal government as well as across numerous state governments, is built upon a foundation that includes a non-profit organization that facilitates broadband initiatives which take action on a statewide basis.

This model, with binary and symbiotic focus on both the supply of and demand for broadband services, uses market-forces combined with targeted state and local government resources to drive deployment, map broadband inventory and identify coverage gaps, sustainably increase adoption by households in every county of each state, leverage extensive consumer research into technology trends, and to tackle research-identified barriers to adoption through digital inclusion programs.

This process has four core components: First, Connected Nation works in collaboration with broadband providers to collect supply-side network information that it translates into granular, statewide maps of broadband availability. Second, this supply-side information is combined with information about demand-side factors through statistical market research at the local level. The goal of this research is to better understand key barriers to broadband adoption that are specific to each community and demographic and to evaluate how broadband services and applications are affecting businesses and households where they are in use. Third, the mapping and research activities provide necessary information to effectively undertake targeted and cost-effective, grassroots demand-stimulation efforts that engage community leaders in the development of a pragmatic broadband policy plan. Each such plan is aimed at tackling the

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should not be left off the Information Super-Highway, and thanks to innovative thinking by groups like Connected Nation, it looks like they won't be." Commissioner Deborah Taylor Tate, "Broadband to the Home: Broadband to America," Speech to Broadband Properties Summit (Apr. 30, 2008) (available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-282030A1.pdf).

barriers to adoption and improving broadband use in each particular community, based on the specific needs of each community. Fourth, Connected Nation focuses on improving technology literacy, awareness, and computer ownership. Our research has consistently shown that lack of a computer is one of the number one barriers to Internet adoption. Connected Nation's No Child Left Offline®, Every Citizen Online ®, and Computers 4 Kids ® digital inclusion programs tackle this problem directly by garnering state and private sector resources to bring computer equipment to low-income children and other vulnerable populations. Community and education efforts such as No Child Left Offline® have the effect of generating demand for broadband services in previously unserved areas. In turn, this increased demand spurs additional private sector broadband investment.

Previously, as part of the Commission's on-going proceeding to craft a National Broadband Plan, Connected Nation filed extensive comments on the model it has implemented with and on behalf of several states, which has been honed over the past five years to be scalable and replicable. For a detailed review of this model and the experience in various states, please see "Connected Nation, Inc. Comments On A National Broadband Plan of Our Future, G.N. Docket 09-51 at http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520220269

## II. MEASURING BROADBAND ADOPTION

The Commission seeks comments on the methods for measuring broadband adoption in **Section 1.**

Connected Nation measures broadband adoption through survey research of both residential and business technology trends.[5] It is necessary to gather these data separately because the drivers and barriers to broadband adoption for a U.S. household compared to a U.S. small business can and will differ. Consequently, strategies and plans to drive adoption increases by the residential and business sectors in communities will differ as well.

While an individual who accesses broadband either at the workplace or a public computing center (such as a library6) is certainly using broadband, it can be reasonably stated that such use is A) targeted to a specific application and B) sporadic, with the ability to use broadband not guaranteed at other times or for all uses. According to a recently released study by the American Library Association, fewer than 40% of libraries nationally report that their connection speed is sufficient to meet their patrons' needs at all times[7]. Consequently, Connected Nation would stress caution in developing a model that attempts to measure this type of broadband use as "adoption," or seeks to count such users as broadband adopters in any measurement of broadband penetration in the U.S. Connected Nation measures broadband adoption outside of the home by asking questions in its surveys about the location of broadband use outside of the home; however, these metrics are reported separately from home broadband adoption.

Similarly, Connected Nation has considered ways to account for end-users who have access to high-speed Internet service solely through web-enabled smart phones. Such use provides

[5] For example, see Connect Ohio's 2008 Technology Assessment: http://connectoh.org/_documents/Res_OHExecutiveSummary06252008_FINAL.pdf

[6] Connected Nation has filed comments specifically regarding the high value of libraries in crafting the National Broadband Plan. See here: http://fjallfoss.fcc.gov/ecfs/document/view?id=7020243836

[7] http://www.ala.org/ala/research/initiatives/plftas/2008_2009/librariesconnectcommunities3.pdf

broadband access almost anywhere and at any time, and mobile wireless devices are quickly advancing to product development stages that give excellent and user-friendly broadband service. At the same time, while Connected Nation measures and reports figures related to web-enabled mobile devices, Connected Nation does not currently count end-users of broadband through such devices when compiling data on broadband adoption levels at the county or state level. Significant differences between the application ability of computers and web-enabled smart phones still exist, particularly for applications related to education. Access to broadband via web-enabled smart phone can and should be considered an excellent gateway or introduction to broadband for many applications, but not a perfect substitute for all applications.

Connected Nation measures broadband adoption in households without determining adoption based on the use of the manner, type or frequency of use of applications. To be sure, Connected Nation seeks information from respondents regarding the kinds of applications they use; this data assists in determining drivers of broadband adoption, and can also assist in measuring savings to a home or business that can then be used to determine the economic benefits of broadband. Connected Nation would suggest that the Commission seek to aggregate available data regarding the manner, type or frequency of use of various applications, and examine these data in relation to the Commission's own survey data in an effort to gain the most comprehensive picture on broadband application use across the U.S and how application use may significantly vary from one location to the next and among different demographic groups. This information holds high value in efforts to overcome barriers to adoption and to measure the value of broadband to an end-user.

## III. Cost of Digital Exclusion and Barriers to Adoption

The Commission also seeks input on the costs of digital exclusion. Many states, as well as the Federal government, have recognized that high-speed Internet service is a transformational telecommunications service that has and is changing the way those in the U.S. live their lives and conduct their business. Fully measuring the benefits of such a comprehensive tool may never be complete; the Internet has adapted and evolved constantly from its first day of existence and will continue that evolution to meet end-users' needs and demand into the future.

It is possible, however, to measure some benefits of broadband, or benefits that have become so widespread and recognizable that they can be assumed available almost anywhere and accessible by almost anyone. From there, any benefit to a broadband adopter represents opportunity cost to a non-adopter. The cost of digital exclusion is total to any household or business that does not use broadband.

Access to the Internet should be considered, for purposes of the National Broadband Plan, as contingent upon access to broadband technology. Simply stated, current applications, the value they hold for end-users, and the speeds necessary to run them require speeds that at least meet the Commission's minimum threshold for broadband.

Connected Nation would advise the Commission to recognize that hardware requirements will change in real-time as broadband networks and speeds change, along with applications and software. To that end, Connected Nation has created a multi-state public-private partnership, titled Every Citizen Online ® to provide entry-level computers to low-income non-broadband adopters. One of the goals of Every Citizen Online ® is to allow program participants the ability

to select their hardware; an assumption is that new users will elect an entry-level computer that provides basic access to broadband.[8]

## DEMOGRAPHIC MARKERS OF DIGITAL EXCLUSION

Many Americans choose not to use broadband, and these Americans are at risk of losing the social and economic opportunity that broadband brings. This is especially true among certain demographics, including the elderly, low-income Americans, adults with disabilities, minority citizens, and those residing in rural areas. Connected Nation's survey data from our research series "Consumer Insights to America's Broadband Challenge" indicates that adoption rates among these demographic groups lag behind those of the general population, at times dangerously so[9]. While state-wide broadband adoption rates in Tennessee, Kentucky and Ohio were estimated at 50% in October of 2008, only 25% of citizens over the age of 65, 23% of households earning less than $25,000 per year, 24% of adults with disabilities, 33% of adults with no college education, 45% of African-American households, 32% of low-income households with children and 38% of rural households subscribe to home broadband service (Figure 1).

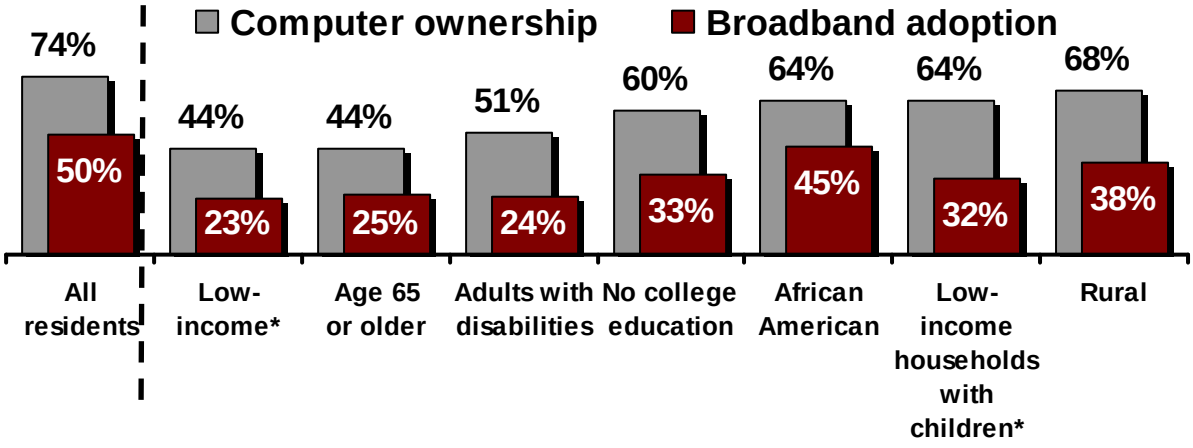
## BARRIERS TO ADOPTION

In "Consumer Insights to America's Broadband Challenge," Connected Nation measured five primary barriers to broadband adoption, including lack of computer ownership, lack of broadband availability, affordability of service, unawareness of the personal relevance of utility of broadband technology, and ability to access broadband somewhere other than the home.

[8] http://connectednation.com/in_the_news/press_releases/CN_Every%20Citizen%20Online_FINAL.pdf
[9] *Consumer Insights into American Broadband Challenge, A Connected Nation Policy Brief*, Oct. 2008, available at http://www.connectednation.org/_documents/ConsumerInsightsBroadbandChallenge_20081013.pdf

## Figure 1- Low Adoption Demographics

**Among various "disenfranchised" groups that are traditionally underrepresented, computer ownership and broadband adoption are lower than the average.**




Q: Does your household have a computer?
Q: Which of the following describe the type of Internet service you have at home?
n = 3,005 residents in Ohio, Tennessee and Kentucky

*Low-income here is defined as annual household income less than $25,000

### Barriers to Adoption Among Demographic Groups

The data presented in Figure 1 shows a correlation between disadvantaged demographic groups and a failure to adopt broadband, and therefore the societal costs are significant. Both the public and private sectors have spent decades and trillions of dollars in efforts to improve the quality of life and opportunity for disadvantaged socio-economic segments of the U.S. population. Broadband is identified as a key component of the U.S. economy and educational and healthcare systems, and the fact that these same segments of the populace aren't adopters is troubling. Furthermore, our research has indicated that when certain demographic groups face multiple barriers to adoption, adoption rates fall even further. In "The Call to Connect Minority Americans," Connected Nation's research shows that only 69% of minorities own computers, compared to 76% of non-minorities. Among low-income minorities, computer ownership falls significantly lower at 46%. Only 47% of minorities subscribe to broadband at home, compared to 52% of non-minority residents. Home broadband adoption among low-income minorities falls

to a staggering 20%. In urban areas, where broadband is nearly ubiquitous, broadband adoption among minorities remains low at only 47%. By contrast, 60% of non-minorities subscribe to broadband in urban areas. In rural areas, broadband adoption among minorities still falls well below non-minorities. Only 33% of minorities subscribe to broadband compared to 40% of non-minorities.[10]

Connected Nation has also filed comments during this proceeding regarding barriers to broadband adoption among adults with disabilities. Chief among the concerns cited and the leading reasons for failure to adopt broadband by disabled Americans are the simple lack of a computer (45% of respondents) and a perceived lack of need, or failure to find relevance in broadband's benefits (40% of respondents).[11]

Concerns about privacy/anonymity, ID theft and child protection do pose a barrier to adoption, although in our research this concern ranks far lower on list of barriers than others.[12] That said, ConnectKentucky has recognized such concerns as a significant enough a barrier to partner with Kentucky's Attorney General in an effort to provide digital safety training through the CyberSafeKY program.[13] Connected Tennessee has partnered with the Internet Keep Safe Coalition (iKeepSafe). iKeepSafe disseminates safety resources to families and is a sponsor of the Computer 4 Kids program in the state.

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[10] *"The Call to Connect Minority Americans,"* http://connectednation.com/_documents/cn_minority_policybrief_final_031609.pdf

[11] See comments filed by Connected Nation in NBP Public Notice #4 -- http://fjallfoss.fcc.gov/ecfs/document/view?id=7020040870

[12] For example, see Connect Ohio's 2008 Technology Assessment: http://connectoh.org/_documents/Res_OHExecutiveSummary06252008_FINAL.pdf

[13] See comments filed by Connected Nation in NBP Public Notice #7, page 32-33 -- http://fjallfoss.fcc.gov/ecfs/document/view?id=7020347166

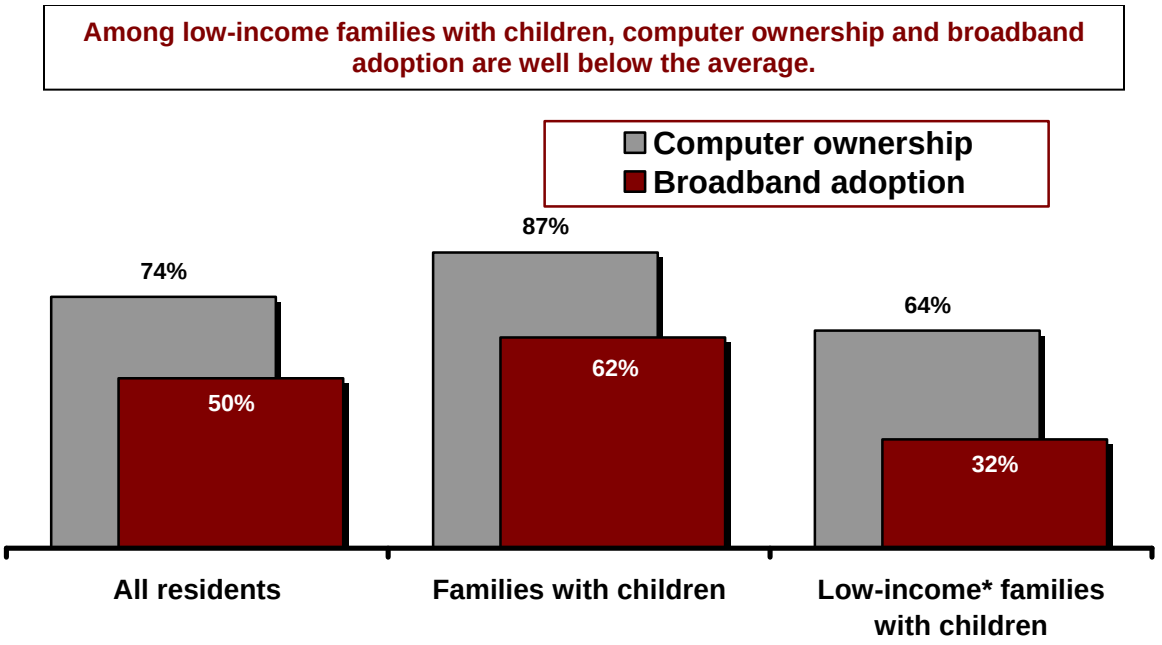
Based on survey research conducted by Connected Nation, information about the price of broadband service is available to non-adopters. In Ohio, 22% of respondents cite the price of broadband as the primary reason they do not have broadband at home.[14]

Finally, among groups that do not understand the relevance of broadband, households with children that do not adopt broadband give cause for concern and attention. In "Consumer Insights to America's Broadband Challenge," four out of ten parents with children who are without a home computer see no need for having a computer in the home. And nearly one-third (30%) of parents with children who do not have a home broadband connection see no need for a broadband connection.[15] Figure 2 demonstrates that among low-income families with children, computer ownership and broadband adoption are well below the average family with children. Low-income families with children are approximately 25% less likely to own a computer and almost half as likely to have broadband in their home.

[14] http://connectoh.org/_documents/ExecutiveSummary_OH_06242009_FINAL.pdf

[15] *Consumer Insights into American Broadband Challenge, A Connected Nation Policy Brief*, Oct. 2008, available at http://www.connectednation.org/_documents/ConsumerInsightsBroadbandChallenge_20081013.pdf

## Figure 2 - Computer Ownership and Broadband Adoption by Presence of Children



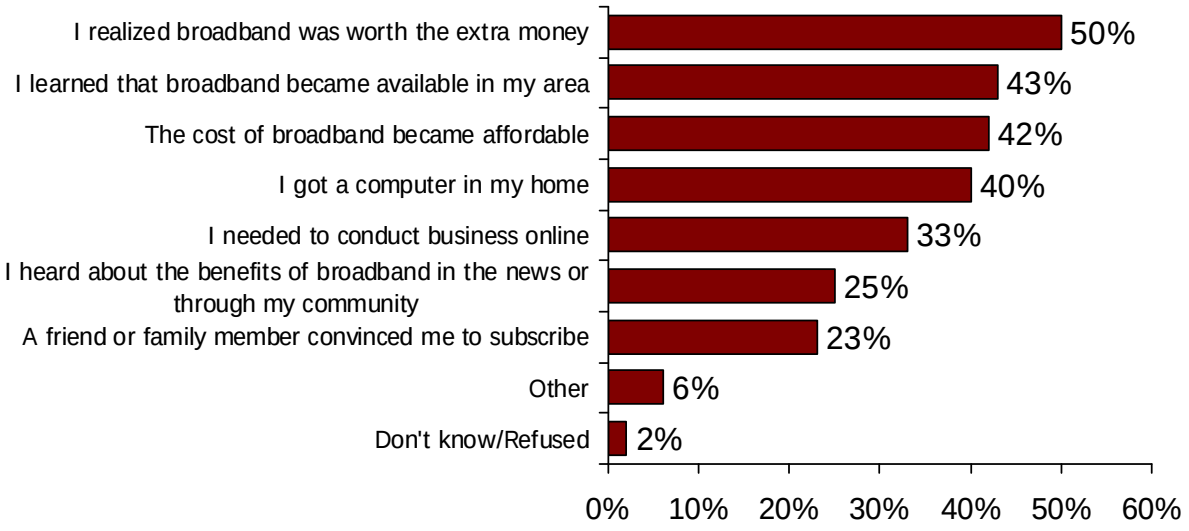

Q: Does your household have a computer?
Q: Which of the following describe the type of Internet service you have at home?
n = 3,005 residents in Ohio, Tennessee and Kentucky

*Low-income here is defined as annual household income less than $25,000

With the Commission seeking comment on broadband and education in NBP Public Notice #15, we will hold further comment except to say that broadband's potential to aid educational opportunity and quality in the U.S. must be built around learners of all age, but it has a longer period of opportunity to influence more Americans if children are a central focus of any "Ed-Tech" related undertaking.

## IV. Overcoming Barriers to Adoption

### Figure 3 – Reasons for Broadband Adoption




2007 ConnectKentucky Residential Technology Assessment: "Which of the following contributed to your decision to subscribe to broadband?"
n=3,776 with broadband service at home.

The Commission seeks comment on an extensive scope of aspects to overcoming barriers to broadband adoption. Because Connected Nation was created to improve both the quality of life and the economy in states where it is active, overcoming these barriers has been a key goal from Day One.

Based on our experience in multiple states, Connected Nation has developed a model that relies upon local, grassroots involvement to combat and overcome barriers to broadband adoption. As part of our mandate, Connected Nation engages in a partnership with local community leaders at the state and at the county level. These efforts follow a programmatic structure that starts with data: broadband mapping to identify the gaps in the network and factors driving broadband demand or the lack thereof in each community. Connected Nation conducts state level research on the availability of broadband deployment (mapping) as well as factors affecting demand for

the services that is drilled down to the county level in order to inform the tactical strategy for county and community leaders. Armed with this tactical information, Connected Nation works with local leaders to facilitate and encourage public private partnerships aimed at developing a county-wide technology expansion plan and, ultimately, encouraging broadband adoption and partnerships to expand broadband deployment.

Connected Nation has learned from experience that a "one size fits all" approach is not effective for creating local broadband plans if communities are to effectively and sustainably fill existing broadband deployment gaps. For example, the plan for a mountainous mining community in Eastern Kentucky will be substantially different than the challenges faced in the farming communities of northern Ohio.

Connected Nation's work for a comprehensive statewide model for broadband stimulation does not end with the broadband inventory maps, survey research, or a focus on the "supply" of broadband that are part of a comprehensive broadband initiative. In fact, these projects are just the beginning of an effective demand-stimulation program. Connected Nation utilizes its research to create a community-driven technology planning process that creates demand for broadband and information technology services, which in turn drives private sector investment, thereby increasing broadband availability while improving technology use.

Local government, community and business involvement is critical to the success of the Connected Nation program because, unfortunately, many of the benefits of broadband go unrecognized or unrealized, particularly in the most rural areas. Even where broadband is available, the adoption rates are often low, and low take rates mean that such areas will likely not receive the next generation of higher capacity broadband services. As a result, a key to encouraging adoption is to demonstrate how technology can impact the quality of life locally

across all relevant sectors of the local economy. Central to this objective is the coordinated development of locally-relevant broadband applications that target the specific needs of each community through civic engagement (e-government), education, healthcare, and economic development.

The strategy developed by Connected Nation to tackle this problem through grassroots involvement is called "eCommunity Leadership Teams." These teams become the point of contact between broadband service providers and local communities.

Community leaders come from key sectors, starting with local government and including other sectors such as healthcare, education, and the local private sectors, all of whom volunteer to develop and implement technology promotion plans within their communities. In this manner, the Connected Nation model fosters a sustainable, grassroots coalition of community leaders representing local government, education, healthcare, telecommunications organized labor representatives, businesses, libraries, agriculture, tourism, and community-based organizations. Connected Nation helps communities quantify their existing use of technology—information that is valuable in attracting private sector broadband infrastructure investment—and also helps identify alternative broadband technologies (such as WiMax) that might provide solutions in particularly hard-to-serve areas.

The goal of these eCommunity Leadership Teams is to use the dynamic mapping and research data in devising a comprehensive, community-based technology planning program. These programs result in county-level tactical technology expansion plans that provide detailed agendas for creating targeted online applications for citizen services, technology literacy programs, awareness building campaigns, and cross-sector collaboration for smart technology investments.

Often plans include detailed analysis of the best means of deploying new and available technology across each of the aforementioned sectors. The overarching purpose of these eCommunity Leadership Teams is to create and aggregate demand for broadband, identify locally relevant applications or solutions, foster cooperation across both private and public sectors to ensure that the community's needs are fully addressed, and create local awareness of the opportunities of broadband.

These teams are the heart of the success of Connected Nation's comprehensive strategy to promote broadband demand and stimulate private investment. Through these teams, communities are engaged in their digital futures and take charge of practical, viable, and sustainable solutions that address the particular barriers to broadband availability and adoption in those communities.

One example of these grassroots efforts is the Strategic Technology Plan for Edmonson County, Kentucky, which can be found on the ConnectKentucky website at http://www.connectkentucky.org/NR/rdonlyres/C9A183EF-A864-45C4-8147-9300E441D63A/0/1_EDMONSONCOUNTYSTRATEGICTECHNOLOGYPLAN.pdf

The Grundy County, Tennessee local technology plan, along with other information and broadband maps specialized for Grundy County, can be found here: http://www.connectedtennessee.org/ecommunity_strategies/find_your_county/grundy/

A final example from Ohio can be found here: http://www.connectohio.org/mapping_and_research/county_profiles/

The ultimate results of these efforts, however, can be found in the countless success stories, some of which are told through our *Connected* newsletters, which can be found at http://www.connectkentucky.org/news_&_events/Publications/connected.php; or here

http://www.connectedtennessee.org/in_the_news/publications/connected_newsletters/; or here http://www.connectohio.org/publications/connected/.

These community programs are successful because they build sustainable, grassroots support for broadband adoption and deployment, and because they incorporate the knowledge, needs, and expertise of each local community and local government representatives. Broadband providers will invest in networks in areas where they know that demand for their service is present and sustainable—and the eCommunity Leadership Teams, built at their core with state and local government assistance, provide that demand stimulation and stability.

## COMPUTER OWNERSHIP PROGRAMS AMONG LOW-INCOME COMMUNITIES ARE AN ESSENTIAL TOOL TO OVERCOME KEY BARRIERS TO ADOPTION

According to 2008 research conducted by Connect Ohio, 52% of households who do not have access to Internet services at home (broadband or dial-up) reported lack of a computer as the primary reason for the lack of connectivity.[16] Research conducted in Tennessee and Kentucky shows similar results.[17] This data is supported by academic research that shows that education and income inequality are important factors that explain low broadband adoption rates.[18] Faced with this challenge to technology and broadband adoption, Connected Nation, working with state leaders, recognized that a critical part of an effective program to address the digital divide challenge must focus on computer ownership for the poor and disconnected.

[16] *Connect Ohio 2008 Residential Technology Assessment.* available at http://connectohio.org/_documents/Res_OH_06262008_FINAL.pdf

[17] ConnectKentucky, *2007 Kentucky Technology Trends: Results of the 2007 ConnectKentucky Residential Survey*. available at http://www.connectkentucky.org/_documents/2007KentuckyTechnologyTrends_residential_3-28-08_001.pdf

[18] *See* G. S. Ford, T. M. Koutsky and L. J. Spiwak, *The Demographic and Economic Drivers of Broadband Adoption in the United States*, PHOENIX CENTER POLICY PAPER No. 31 (Nov. 2007). According to the Phoenix Center, "broadband adoption is intimately tied to demand-side factors like income inequality and education, and policies directed at those factors may be more cost effective than supply-side subsidies and regulation." *Id.* at 5.

Since its origins, Connected Nation has had the pleasure to help deliver on behalf of state government and private donors thousands of computers to low income children and centers that serve them through our No Child Left Offline®, Every Citizen Online®, and Computers 4 Kids® digital inclusion programs. These programs bring together public and private partners to promote digital inclusion by placing computers in the hands of low-income and otherwise disenfranchised children and their families. The private sector promotes the program through generous donations. State government brings to the program financial support as well as the resources of multiple state agencies to help identify and locate candidates to receive computers and implement the program.

At its inception, Connected Nation's digital inclusion program benefitted from the use of refurbished computers (older equipment discarded by state governments as they upgraded hardware inventories). As time has passed however, many states have moved from purchases of hardware to lease/buy-back programs, which save governments the full-cost of hardware replacement and the costs of disposing of hardware in an environmentally safe manner. Furthermore, costs of new hardware continue to fall and hardware capabilities advance at a rapid rate; taken together, all of these factors have driven Connected Nation's digital inclusion programs to pursue purchases of new hardware and partnerships with consumer electronics manufacturers to drive the programs' success.

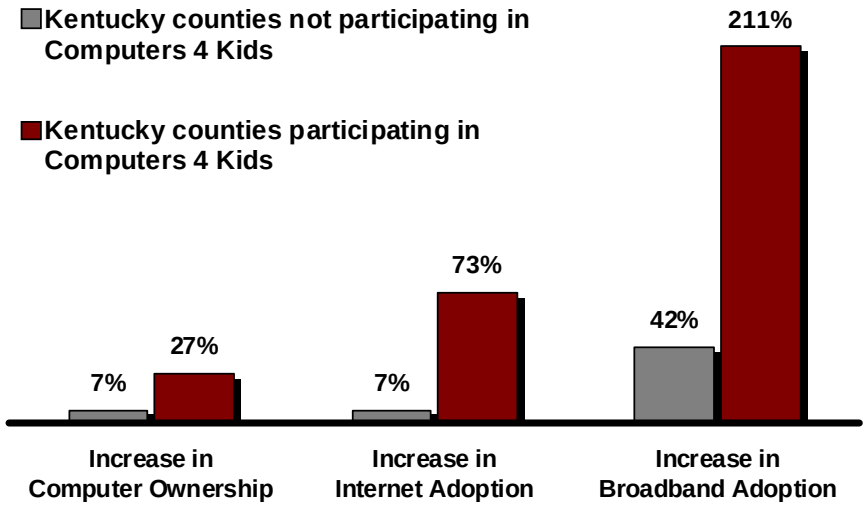
No Child Left Offline has delivered more than 3,200 Internet-ready computers to disadvantaged individuals and families across the state of Kentucky, and over 600 computers in Ohio. A similar program is tackling this challenge in Tennessee. Operated by Connected Tennessee and the state's Department of Human Services and the Department of Children's Services, Computers 4 Kids have delivered about 2,151 computers to exceptional foster kids and families facing

economic challenges . Since 2006, Connected Nation has distributed nearly 6,000 computers to children and community centers in need.[19]

Computers 4 Kids and its sister programs have had a dramatic impact on the lives of thousands of families. According to the ConnectKentucky 2005 and 2007 Residential Technology Assessments, computer ownership among low-income families in Computers 4 Kids counties grew nearly four times faster over the last two years than among low-income families in other counties. During the same two-year period, Internet adoption among low-income families in Computers 4 Kids counties grew more than ten times faster relative to these families in other areas of the state. Broadband adoption among low-income families grew five times faster in counties that received computers through Computers 4 Kids.

Indeed, in the last two years, home broadband adoption among low-income families has grown by over 200% in these participating counties (Figure 4).[20]

## Figure 4 - Technology Adoption Among Low-Income Families with Children




[19] http://www.youtube.com/watch?v=l38Pa6IrNUk

[20] Counties participating in Computers 4 Kids include the Kentucky counties of Johnson, Clay, Wolfe, McCreary, Owsley, Carter, Lawrence and Morgan. Low-income is defined as annual household income below $25,000. *See 2007 Kentucky Technology Trends, supra* n. 10, at 27.

It is quite clear that programs like Computers 4 Kids have a substantial impact upon broadband adoption rates. And adoption rates are the key to ensuring that communities continue to receive next-generation broadband investment.

While Connected Nation would urge the Commission to craft a National Broadband Plan that seeds initiatives like Computers 4 Kids or Every Citizen Online, it would also argue that these initiatives are best operated and managed at a state and local level, where stakeholders directly involved in the communities they serve can provide necessary insight into each community's specific needs.

### TARGETING SPECIFIC DEMOGRAPHIC GROUPS FOR BROADBAND STIMULATION ARE A EFFECTIVE MEANS TO TACKLE THE DIGITAL DIVIDE

The initiatives and programs described above were designed to tackle both the broadband supply and demand challenges faced by states. Connected Nation's research has shown that these initiatives and progress are successful at increasing household broadband adoption rates.

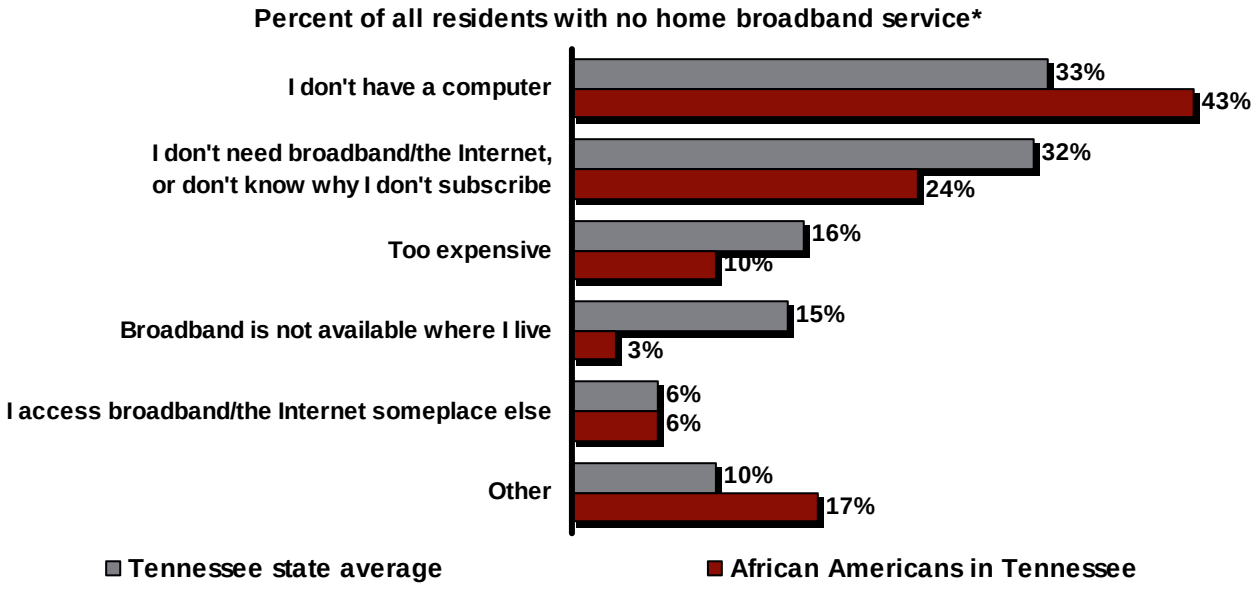
Early on in our experience working to tackle the broadband challenges, Connected Nation learned that there are particular demographic groups who lag behind the general population in technology adoption, and low-adoption groups vary across states and across communities within each state. Working with state/local leaders and other stakeholders, Connected Nation developed specific programs targeted to such populations. One example of these targeted efforts in the State of Tennessee focused on the African-American population.

Early research obtained at the beginning of the Connected Tennessee program in July 2007 identified African-Americans as a demographic significantly lagging behind the overall state population in technology adoption. At the time, survey research estimated average statewide

residential broadband adoption rates to be 43%.[21] By contrast, the African-American residential broadband adoption rates at the time were an estimated 37%.[22] Similarly, African-Americans in the state lag behind in computer ownership. While an estimated 71% of state households had a computer in the home, an estimated 60% of African-American households owned a computer in 2007.

Research also showed that barriers to computer ownership and broadband adoption among African-Americans in the state showed a different pattern then amongst the overall population (figure 5[23]).

## Figure 5 - Barriers to Adoption at the Inception of Connected Tennessee (July 2007)




[21] Technology Assessment of Tennessee Residential Consumers, September 2007, available at http://www.connectedtennessee.org/_documents/CTResidentialSurvey100107.FINAL.pdf
[22] Ibid.
[23] (n=6,174 TN residents who have no broadband connection at home, 318 of whom are African-American). *Percentages do not add up to 100% because individuals could give multiple responses.

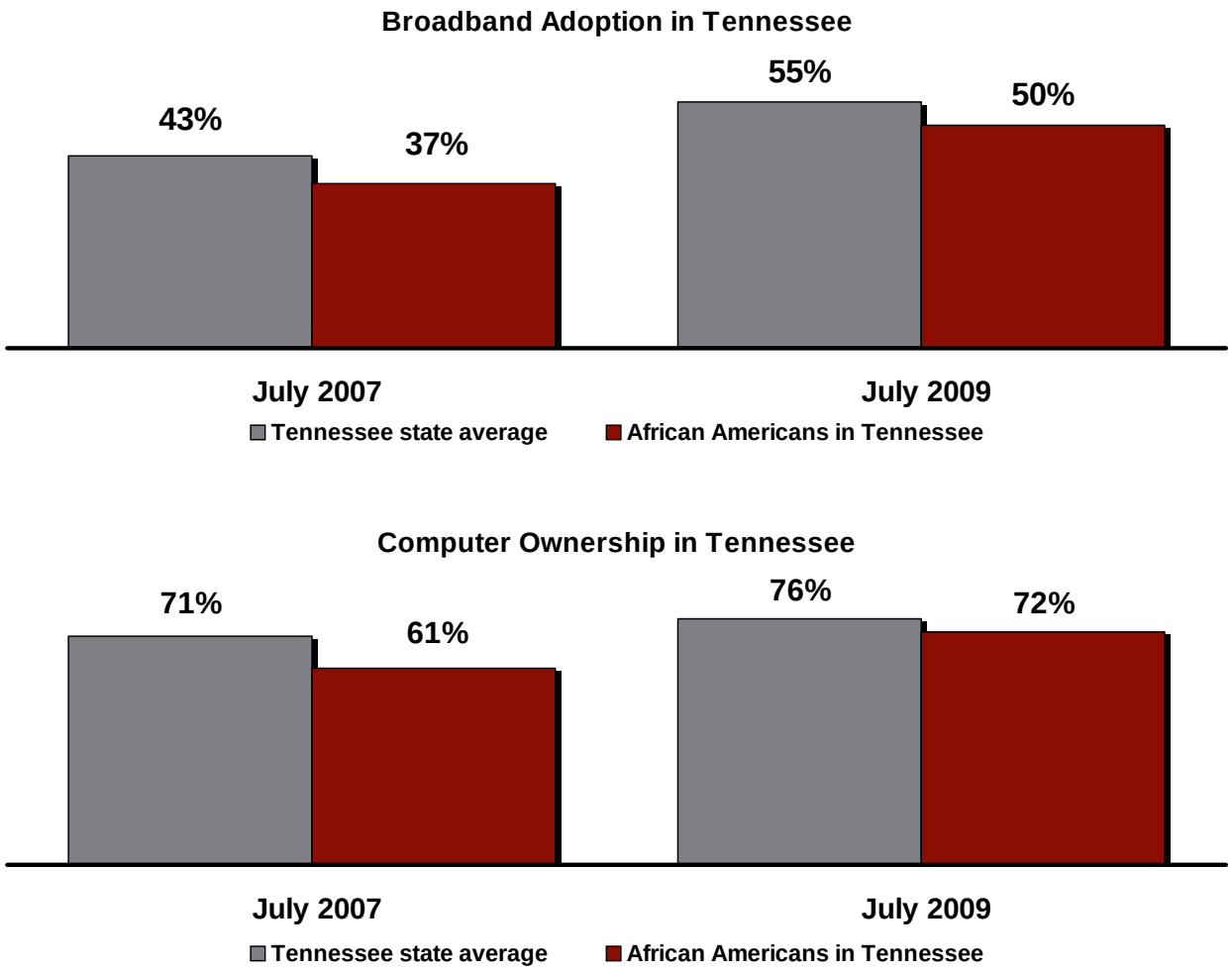
In July 2007, 40% of African-Americans households without a computer stated that they did not need a computer, while 31% reported that computers were too expensive and 21% stated that they used a computer elsewhere. Further, 43% of African-Americans who did not subscribe to home broadband service cited the lack of a home computer as a barrier to adoption. Nearly one-quarter of African-Americans (24%) stated that they did not need broadband, while 10% cited expense as a barrier, and 3% reported the lack of availability as a barrier to broadband adoption.

Based on this data, Connected Tennessee and state leaders, led by Governor Bredesen, decided to implement technology and broadband stimulation campaigns targeted to African-American communities in the state. The programs implemented included the afore-mentioned grassroots, educational, and technology awareness campaigns through the eCommunity Teams, as well as computer distribution programs through the Computers4Kids program, which targeted African-American communities and households.

The results of these efforts have been highly successful and serve as a keen example of a state-led program for broadband stimulation that works. Broadband adoption rates among African-Americans in Tennessee have experienced a marked increase, growing more rapidly than adoption rates amongst the overall population at a time when national trends show a lagging of broadband adoption growth amongst African-Americans (figure 6).[24]

[24] Source: July 2007 and July 2009 Residential Technology Assessments of Tennessee
2007: n=TN 9,513 residents, 463 of whom are African-American
2009: n=1,200 TN residents, 90 of whom are African-American

## Figure 6- Technology Adoption in Tennessee




Adoption rates by African-Americans in Tennessee were 37% in 2007 and 50% in 2009, representing a 35% growth rate during the two year period from 2007-2009. By contrast, Pew Internet and American Life Project survey estimates indicate a national adoption rate among African-Americans of 40% in 2007 and 46% in 2009, an increase during the two year period of 15%, lagging behind average national growth trends.[25] The number of African-Americans that own a computer in Tennessee grew 11% from 2007-2009 vs only 5% amongst the average population in Tennessee.

[25] Pew Internet & American Life Project, Broadband Research Series 2007-2009.

In short, data indicates that these programs work. Targeted programs that seek data to inform strategies and identify particular populations that are lagging behind and address the barriers to adoption that are most significant among these at risk populations work. Targeted educational programs, technology awareness campaigns and programs that aim to address key barriers to adoption, such as computer distribution programs for low-income households, are effective means for federal, state or local government to address the digital divide and work to universal access and usage of these technologies.

**FURTHER UTILIZATION OF PUBLIC-PRIVATE PARTNERSHIPS DRIVEN BY STATE AND LOCAL LEADERSHIP PROVIDES MOST EFFECTIVE METHOD TO OVERCOME BROADBAND ADOPTION BARRIERS**

On October 10, 2008, S. 1492, the Broadband Data Improvement Act became P.L. 110-385, after having passed the U.S. Senate and U.S. House of Representatives unanimously. In addition to bipartisan and widespread support on Capitol Hill, the Broadband Data Improvement Act attracted support from a diverse group of organizations, non-profits, and companies.

Section 106 of the Broadband Data Improvement Act created the State Broadband Data and Development Grant Program, which was intended to fund comprehensive statewide broadband initiatives through competitive grants from NTIA. NTIA was directed in P.L. 111-5 to use up to $350 million to fund the State Broadband Data and Development Grant Program, in addition to creating and maintaining a national broadband inventory map.

The clear intent of Congress, in authorizing the State Broadband Data and Development Grant Program in Sec. 106 of P.L. 110-385 and then providing up to $350 million for that program in the American Recovery and Reinvestment Act, was to have this grant program work in concert with the other programs authorized and funded as the Broadband Technology Opportunities Program.

To date, the NTIA has logically focused on using the State Broadband Data and Development Grant Program to ensure that a statutory mandate for a national broadband inventory map contained in the ARRA be met by Congress' enacted deadline of February 17, 2011. However, during development of the Broadband Data Improvement Act, the State Broadband Data and Development Grant Program's activities were created to be comprehensive and co-dependent upon each other.

In fact, Section 106 of the Broadband Data Improvement Act, which establishes the State Broadband Data and Development Grant Program, can and should provide grants to state-based public-private partnerships for statewide broadband expansion programs. According the BDIA, the statewide programs shall include:

- Creation of a "geographic inventory map of broadband service" within each state. The map shall identify broadband gaps through GIS technology, based on "the geographic boundaries of where service is available or unavailable among residential or business customers." The map shall also include a baseline number of statewide households with broadband availability.
- A baseline assessment of broadband deployment in each state.
- Tracking of unserved and underserved areas within a state.
- **Tracking of broadband adoption and related information technology services among residents and businesses. (emphasis ours)**
- Tracking possible suppliers of broadband and related services.
- **Identification of barriers to adoption among residents and businesses. (emphasis ours)**
- Identification of available broadband speeds, in accordance with FCC speed tiers.

- **Creation and facilitation of a local technology planning team in each county or designated region within a state. Each team shall represent a cross section of the community, including government, education, healthcare, business, organized labor, libraries, agriculture, tourism, and community-based organizations. Each team shall benchmark technology use across sectors, set goals for improved use within each sector, and develop a "tactical business plan" to reach its goals, "with specific recommendations for online application development and demand creation." (emphasis ours)**
- Collaborative work with broadband and IT providers to encourage deployment **and adoption**, **especially in** unserved and **low-adoption** areas**, through "local demand aggregation**, mapping analysis, and the creation of market intelligences to improve the business case for providers to deploy." **(emphasis ours)**
- **Establishment of programs to improve computer ownership and Internet access for unserved and low-adoption areas. (emphasis ours)**
- **Collection and analysis of detailed market data on the adoption of and demand for broadband and other IT services. (emphasis ours)**
- **Facilitation of information exchange between public and private sectors regarding adoption of and demand for broadband. (emphasis ours)**

Broadband mapping was to depend on a statewide and grassroots demand-stimulation program, with local consumer research on technology trends designed to support efforts to drive deployment and increase adoption. Finally, digital inclusion programs to provide computers to disadvantaged populations were also included as part of the State Broadband Data and

Development Grant program in order to tackle one of the documented greatest barriers to adoption: lack of a computer in the home.

In the Broadband Data Improvement Act, Congress states:

> "The Federal Government should also recognize and encourage complementary State efforts to improve the quality and usefulness of broadband data and should encourage and support the partnership of the public and private sectors in the continued growth of broadband services and information technology for the residents and businesses of the Nation."[26]

Taken together, the Broadband Data Improvement Act and the American Recovery and Reinvestment Act contained a comprehensive broadband policy laid out by the U.S. Congress that will do much to improve broadband deployment and adoption in the United States.

The NTIA has worked swiftly to ensure that it is positioned to deliver a national broadband inventory map to Congress by February 2011, and is also working to provide grants from the Broadband Technology Opportunities Program (BTOP) for infrastructure, sustainable adoption programs, and to expand the capacity of public computing centers.

Funding and authorization for BTOP, however, is mandated by the ARRA to cease by the end of Fiscal Year 2010. Authorization will still exist for the State Broadband Data and Development Grant Program, and the Federal government should use the Broadband Data Improvement Act to ensure that state government initiatives, including those funded under the BTOP sustainable adoption program, can continue or adapt to become comprehensive and statewide efforts.

This role of enabling initiatives that are driven by the public sector at the State and Local government level, with information aggregated upward, will allow the Federal government the greatest efficiency from its allocated resources. The State Broadband Data and Development

[26] P.L. 110-385, Sec. 102 (4)

Grant Program can (and was intended to) be utilized well beyond the current Fiscal Year to fund statewide efforts that map broadband inventory, aggregate demand and grow adoption rates, drive broadband deployment into unserved and underserved areas, and conduct extensive consumer research concerning the use and demand for broadband service and related information technology services.[27]

Connected Nation has found, through its experience, that non-profit facilitation of broadband initiatives is needed in order to foster the greatest level of collaboration between the public and private sectors at the state level. Historically, engagement of both public and private sector stakeholders has been critical to the success of the broadband programs created and run by Connected Nation.

[27] See P.L. 110-385, Section 106.

## V. LEARNING FROM EXISTING PROGRAMS

Connected Nation has years of experience from working and fine-tuning multiple programs in several states. The overarching goals of these programs has been to create broadband ubiquity, and produce higher adoption rates among all households and demographic groups, believing that broadband and the use of broadband lead to better quality of life, enhanced opportunities, and a stronger economy.

For a detailed review of this model and the experience in various states, please see "Connected Nation, Inc. Comments On A National Broadband Plan of Our Future, G.N. Docket 09-51 at http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520220269

To address in brief specific queries in NBP #16:

- State, local and tribal governmental entities are an indispensible element to successful broadband initiatives, but Connected Nation has found the most successful programs augment public sector partners with private sector and non-profit stakeholders.
- Connected Nation measures its success by comparing its benchmark research on technology trends with subsequent research that seeks to identify growth and improvement.[28]

[28] Technology Assessment research can be found here: http://connectednation.com/research/

## VI. CONCLUSION

Throughout the preceding comments, Connected Nation has provided input regarding its methods of measuring broadband adoption rates, tracking adoption increases, and identifying the various barriers to broadband adoption and reasons for broadband adoption. Connected Nation has also, in this and previous comments filed with the Commission, detailed the strategies employed to overcome barriers to adoption and the important role public-private partnerships play in assisting local stakeholders to develop and create local applications that improve quality of life (and consequently, broadband's relevance) for their communities.

Clearly, the U.S. Congress recognized the value of public-private partnerships as it crafted the Broadband Data Improvement Act because it seeks to "encourage and support the partnership of the public and private sectors in the continued growth of broadband services and information technology." Through recognition of the value that public-private partnerships play in identifying and overcoming barriers to broadband adoption in the National Broadband Plan, the FCC can ensure that the Federal government will continue to support these highly beneficial initiatives.

Respectfully submitted,

/S/

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